



Intra-urban societal vulnerability to extreme heat: The role of heat exposure and the built environment, socioeconomics, and neighborhood stability

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Abstract:

Extreme heat is an important weather hazard associated with excess mortality and morbidity. We determine the relative importance of heat exposure and the built environment, socioeconomic vulnerability, and neighborhood stability for heat mortality (Philadelphia, PA, USA) or heat distress (Phoenix, AZ, USA), using an ecologic study design. We use spatial Generalized Linear and Mixed Models to account for non-independence (spatial autocorrelation) between neighboring census block groups. Failing to account for spatial autocorrelation can provide misleading statistical results. Phoenix neighborhoods with more heat exposure, Black, Hispanic, linguistically and socially isolated residents, and vacant households made more heat distress calls. Philadelphia heat mortality neighborhoods were more likely to have low housing values and a higher proportion of Black residents. Our methodology can identify important risk factors and geographic areas to target interventions.

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Resource Description

Exposure :

weather or climate related pathway by which climate change affects health

Temperature

Temperature: Extreme Heat

Geographic Feature:

resource focuses on specific type of geography

Urban

Geographic Location:

resource focuses on specific location

United States

Health Impact:

specification of health effect or disease related to climate change exposure

Climate Change and Human Health Literature Portal

Morbidity/Mortality

Mitigation/Adaptation:

mitigation or adaptation strategy is a focus of resource

Adaptation

Population of Concern: A focus of content

Population of Concern:

populations at particular risk or vulnerability to climate change impacts

Elderly, Low Socioeconomic Status, Racial/Ethnic Subgroup

Other Racial/Ethnic Subgroup: Black, Hispanic

Resource Type:

format or standard characteristic of resource

Research Article

Resilience:

capacity of an individual, community, or institution to dynamically and effectively respond or adapt to shifting climate impact circumstances while continuing to function

A focus of content

Timescale:

time period studied

Time Scale Unspecified

Vulnerability/Impact Assessment:

resource focus on process of identifying, quantifying, and prioritizing vulnerabilities in a system

A focus of content